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## ENTROPOLOGY

PHILOFICTION ANTHROPOZÄN, APOCALYPSE, ENTROPOLOGY, MARX, QUANT

At the end of the second decade of the twentyfirst century, it has become *de rigueur* to speak not only of an Anthropocene but of a post-Anthropocene, whose template has been provided by that historical fissure in which the late industrial World Order was cracked open & prised apart by a rapid succession of wars, nuclear armament, the Marshall Plan, cyberneticisation & neoliberalism, exposing the vista of an ideal (because viewed from the perspective of monolithic power) *tabula rasa* – like a virgin resource just beyond the frontier, on the other side of History. It is possible that the discourse of the End of History & its reversal within that of a resurgent transcendentalism have become more pervasive, more insistent, more *determined* than at any previous time, even if, as is frequently said, “the ability to conceive of the history of hominids & the destiny of the Earth in the same temporal

trajectory seems particularly deceptive today.”[1]

The question that would still need to be asked is, In what does this *deception* consist & what is the nature of its *seeming*? For it cannot simply be a matter of overturning this relation – this *identity* – between the so-called human & the “destiny of the Earth,” yet the imperative to comprehend it, under the sign of a “call to order,” is caught in a double-bind. The deception that lies at the heart of the discourse of the Anthropocene – as both an objective error *imposed upon the world* & its recoil in a Rousseauesque *return of nature* (above all the “natural disaster”) in the register of *the real* – is no less a humanist delirium than is the claim of a disinterested Reason over the task of its correction. Yet the metaphysical foundations on which Reason’s disinterest stands, as that which is unbounded by the worldly confines of “the history of hominids,” are precisely what must be maintained here *against* the universality of an Anthropocenic movement that threatens to erase all such prior claims to an *exteriorisation of the world*.

Yet just as metaphysics is created in the (abstract) image of “man,” so too this “deception” is made to prevail over what is in fact most alienating to “man” in the Anthropocene: a world that is not the object of Reason, but which stands fully in place of Reason; a world not subsumed by technology, but constitutive of it; a world not alienated by “human” forces that have obtained, in its termination, an irrefutable ascendancy & mastery (“the destiny of the Earth”), but which *is* that alienation in all its radical ambivalence. To submit this deception to the work of Reason – in order to dispel the error, or rather superstition, to which this act of comprehension (of the world in its relation to History & of its singular inscription or destiny) risks succumbing – requires firstly that we submit Reason (whether idealised or instrumental) to the very critique that this “deception” necessitates. In the final analysis, it may be that what are summoned under the terms Reason & Anthropocene can in no way be *opposed* to one another & that, in pretending to stand apart from the “deception” it would seek to remedy, such a Reason can only remain true to its object by deceiving itself. The object, so to say, of truth, in the relation of Reason, of History, of The Human, to that which by definition *exceeds it* & yet which, in the same movement – & by an equivalent logic – it precomprehends. That it comprehends *in advance*, standing before it, as the mirror of this *Weltgeist*, and by such means *brings it into view*.

What this question concerns isn’t simply the *deception* at work in any of those “simulated or simulating (& dissimulating) representations” of this *beyond* (this “exteriorisation,” as we will come to see), to which Reason itself must also make recourse, but rather, as Jean-Luc Nancy reminds us, “a matter of what does not pertain to representation at all.”[2] Not simply the point at which representation encounters its own impossibility (of the *unpresentable*, etc.), but of that which cannot be thought within or by means of any regime of *mimēsis* whatsoever: the so-called *return of the real* (in which the figure of “nature” is thus subsumed). Within the abundance of this resource of the unpresentable lies that void upon which – through the entire course of its history – Reason has nevertheless most desired to gaze. In this nascent figure, this trope of the void, Reason seeks to finally break with “the terrifying insufficiency of all the various assurances of knowing”[3] through an experience of the impossible. Which is to say, of its *non-experience*. Of the impossibility of any experience as such. A movement that both exceeds & recoils from its limits, which in any case it has already *figured* as an empty

circularity. Far from marking Reason's failure, this subversion (its empty circularity) presents itself today, in the pentecostal tones of a post-Anthropocenic philosophy, as its ultimate affirmation: *the impossibility of ending*.

## 1. Anthropocene, or the Historical Mission of Capital

The lesson of cybernetics & of the physical sciences is that *there is no movement from organicity to abstraction* upon which a teleological view of History can stake its claim. No devolution from “life” to “technology.” No decline from a prior pristine “nature” to “artificiality”; from a “human condition” to one of “alienation”; from “work” to “commodity.” Not even of the *entire work of an epoch*, as Nancy says.[4] And if these terms do not devolve into one another on the basis of a teleology, it is because their co-implication is itself the defining logic of evolutionary processes: “life” itself must be understood “technologically” in its very origin, constituted by & through operations of “alienation,” & so on. This rupture in neo-Humanist & neo-Vitalist discourse has come to constitute something like a trauma in contemporary thought, above all in the heterogeneous figure of the Anthropocene, in which appeals to *ecological values*, against the spectre of “humanly mediated” global climate *catastrophe*, go hand-in-hand with a return of a “technical” or “instrumentalist” Reason. (And *ipso facto*, its duality in a metaphysics of “pure” Reason.) That is to say, with a return – via an appeal to an objective geological register – of precisely those abstractions that the critique of the Anthropocene has apparently sought to negate or overcome & in which, as Nancy argues, “humanity” *has never taken place so exactly*.[5]

The form of this trauma can be detected in the sort of remarks that have been directed by Peter Sloterdijk against the re-emergent genre of “alarmist ecological literature,” as he calls it. In an article entitled “The Anthropocene: A Process-State on the Edge of Geohistory?” Sloterdijk writes:

*it seems that the proliferation of this term can be explained above all by that fact that, in the guise of scientific neutrality, it transmits a message of nearly unsurpassable moralist-political urgency; a message which, in explicit language reads: Humans have become responsible for the inhabitation & business administration of the Earth as a whole every since their presence on it stopped unfolding in the mode of more or less traceless integration.*[6]

Sloterdijk's argument identifies several key strains in this traumatic register, in which the ideological agency of the Anthropocene is sublimated & transferred successively onto:

1. the *human* (as a collective subjectivity), to which is attributed “an ability to perpetrate crimes of geo-historical dimensions”;
2. *technology* (as human prosthesis), retrieved via an obscure characterisation of labour in Marx as “the metabolic interaction between *human beings & nature*,” & thus the “continuation of natural history in another register”;
3. *history* (qua materialist teleology), posed as an “attempt to evaluate the world from the perspective of its end,” & thus implying “a cosmo-moralistic sorting process.”[7]

This schema, in which “humanity” is posed as a “meta-biological agent,” operates to produce an image of “capitalism’ as global fatality,”[8] wherein the Anthropocene may be regarded as the accelerated spiral of an abstract vicious circle principle in which “capitalism” (as an

expression of the amplitude of Reason itself) has been swept along. It is a schema entirely contiguous with the discourse of *technological singularity*, for which the primitive industrial phase of the Anthropocene will have served as an evolutionary prologue. Under the constellation of technological singularity are thus gathered the various discourses of post-history & post-humanism, in which collective responsibility for this geo-historical terminus immediately transforms into the abstraction of a technological Weltgeist marked by human obsolescence.

The apparent paradigm shift from the biological to the technological is supposed to accomplish itself, moreover, in a purely autonomous fashion, in which the so-called “human” is not only alienated from its privileged position vis-à-vis Reason but is so in a seemingly spontaneous, yet also fatalistic, way, as if *divorced from ideology*. It is the “human species” (& not capitalism for example) that bears responsibility for those world-negating actions conjured by the Anthropocene, & it is the “human” (& not capital) that is sacrificed to obsolescence in the coming singularity – a purely rhetorical sacrifice, of course, since “human” here merely refers to an opportunistically “ethical” category that supersedes itself in the (posthumanist) narrative of *transcendental capitalism*: which is to say, the seeming inversion of the old Marxist paradigm in which capitalism is delimited as the *revolutionary process* of a necessary transition to world socialism.[9] This would appear to correspond to what Vincent Garton has called “the progressive divorcing of capital itself from capitalism as a human social formation”[10] towards its reformulation in what Primož Krašovec terms *alien capital*. “Capital is alien,” Krašovec writes, “not (only) as an unconscious or unforeseen dimension of human activity, but as an additional actor, the ‘eighth’ passenger of capitalist economy: *alien*.”[11]

## 2. Entropy is the Meaning of the Real

Marx himself had already observed that only in its self-alienation does capitalism represent the operation of *its own* transcendence – firstly by transforming the crises of production into an expanded “means” of self-propagation –

*the same vicious circle would be described once more under expanded conditions of production, with an expanded market & increased productive forces...*

– then by its generalisation of crisis (the totalisation of its internal contradictions) as the very *logic* of its system of control:

*it becomes an alienated, independent, social power, which stands opposed to society as an object.*[12]

This objectification, like that of the Anthropocene in which its entire movement is inscribed, becomes ever more concrete just as the entropic production of “human obsolescence” is ever more accelerated & ramified *towards its ideal form* in the automation of globalised & financialised capital. This is not due simply “to the development of autonomous machines & artificial intelligence in the direction that anthropocentric theories of capital are unable to detect, i.e. towards an ever-greater independence of capital from humanity,”[13] but rather to the alien basis of humanity *in capital*.

Just as Marx advised the necessity of Ricardo's insight into the distinction between “human

beings” & the “development of productive forces” (whose development was “the historical task & justification of capital” without consideration for humanity in its moral appeal), so too the Anthropocene must be grasped in its relation to *its* forces of production, being also the forces of that self-supersession of the Anthropos implied by a terminal *technological singularity*. And to the extent that such forces can be attributed to a generalised “evolutionary” movement, it would be no less the case that this “evolution” would place no higher premium on *human obsolescence* than it would on the *human exception*. It is in this sense that Sloterdijk’s observation that the Anthropocene contains “the spontaneous *minima moralia* of the current age”[14] makes sense as a kind of Kantian imperative arising upon a foundation of *radical ambivalence*.

In either case, it is necessary to recognise that these seemingly opposed terms – obsolescence & exception – merely function here to resituate the “human” as the privileged term within a binary relation in which the non-human, the alien & the technological retain what amounts to a distinct eugenics that denies *not* a general miscegenation along the lines of the cyborg or some other form of biotech hybrid, *but* the fact that the “human” – & by declensions “nature” & “life” in general – is *always already technological*, & that it is so *from its origin*. It is only by preserving or re-inscribing the nature/technology dichotomy that such concepts as the “technological singularity” & of the “posthuman” obtain their meaning, whereby one might continue to speak of a certain “technological” future as a *posthumous condition*, ruled over by a principle of *non-life*, of *artificiality*, of *virtuality*. And by an impeccable dialectical logic, this would also serve as an extension, after the fact as it were, of the “human” & of a Humanist rationale, via the prostheses of the *non-human*, *super-human*, *in-human*, etc.

In such a way, this transcendental itinerary of the “alien,” as that element which governs experience from “beyond life”), would not describe the negation of the “human” but its *apocalyptic return*, as the definitive form of an evolutionary process *whose author it will have become*. It is indeed this preoccupation with the spectral valences of the “human” that permit a certain *alien capital* to inscribe the “epoch” of the posthuman through a reinvention of the discourse of the *perfectibility of man*, while simultaneously announcing “man’s” *obsolescence* – the two terms are in fact interchangeable – thereby producing this *ultimate form of the completion of History* out of its own circular & (seemingly) paradoxical itinerary. It remains, in any case, that the belated & all-too-human status of the Anthropocene – as a purview in retrospect – is, has always been, ideological to its core. That is to say, a *technē politikē*. Which does not mean that it *is not real* or that its is merely an “externalisation” of human agency onto some other abstract entity (a scapegoat of some kind, some “alien capital” for example); rather it means that what continues to be posed as the ideologically neutral counterpart of a Humanism – whether by appeal to the “real,” to “nature,” or to “technology” as *externalised prosthesis* – demonstrates itself to be ideological from its origin: this inhabiting “alien” element that assumes the form, as Freud says, of a “thing that thinks.”

It is only in this sense that Sloterdijk can speak of the Anthropocene as a “cosmo-moralistic sorting process” that effectively redistributes its *means of production* onto the supposedly objective categories of the *human*, *technology* & *history*, & away from the system of ideology

that inscribes them. The work of *responsibility* for the Anthropocene is thus vested in purely “material” processes which – in being indifferently ascribable to humanity, technology or history – can for all intents & purposes be subsumed into the “natural metabolism” of a kind of autonomous planetary agent or *Weltgeist*. This work – which bears all the marks of a fetishism – is the very apotheosis of *alienated labour*. Through its alienating effects upon the very “fabric of the real,” & by “externalising” itself from its own processes, capital operates as the *alibi of the world*, by promising a *world to come*. Just as “production of surplus value” is conventionally regarded as “the social form of the process of production in capitalism,” so too the production of a certain *futurity* as world-prosthesis is given as capital’s assurance of a transcendental surplus, beyond the apparent eschatology of the Anthropocene.

If the Anthropocene is taken here to signify a final (authentic) End-of-History, then capital is nevertheless imbued with the special capability of teleporting the world *into the beyond* (this end-world is in fact *nothing other* than a perpetual *forethrow of the beyond*). Yet what constitutes the alien-in-capital is not the autonomous agency attributable to this process, or to the “surplus” produced by it – as if it were a detachable logos – but rather to the *absence of any beyond as such*. The true characteristic of alien capital is that *what appears to be surplus-production* is in fact a movement of dissipation: *dissipation accumulating dissipation*. It is this movement – known from thermodynamics as entropy – in which the “externalisation” of capital has always been constituted. It is a movement that does not extend outward from the world, or from one world to another, but which constitutes the world in its very limits. That is to say, by inflation. As Bataille has argued, in re-orientating the theory of capital towards a *general expenditure*, dissipation isn’t simply a “middle term between two expropriations,”[15] but capital’s *raison d’être*. It is, in a manner of speaking, its own movement of alienation, but an alienation that orbits around a nucleic void: there is no prior, more authentic Being of capital, nor is capital capable by itself of inaugurating a positive “productive force” that is not already an operation of entropy. In this sense, too, the alienation of capital is not something that merely befalls the world – an “Anthropocene,” for example, that could simply be detached under conditions of a *post-capitalism*; it is *endemic* to the world. Moreover – & this is perhaps the most radical implication of this line of argument – its very “logic” is generalised to such a degree that it’s longer possible (were it ever) to separate this *alienation* from the constituency of “life itself.”

### 3. Dissipative Structures

The thought of “alien capital” – as an autonomous dissipative principle – can be said to relate to what Bataille calls the “insufficiency of the principle of classic utility” in the manner of a *potlatch*. Everything that up until now has been subsumed under the category of “productive forces,” can be shown (in principle) *not* to conserve a “surplus” or “reserve” but to be wholly orientated towards an increase of expenditure. This general dissipative economy ramifies itself through a system of feedback, in which “growth” is determined as an accumulation of dissipative effects. Dissipation produces more dissipation in the mode of an eco-ideological struggle to maximisation. Ecology *is* this struggle; & it is *ideological* on the level of dissipation as the determining *rationale* of its operations – which is to say, its *system of meaning*. Sloterdijk attributes such a view to the advent of cybernetics, in particular the viewpoints set out in Buckminster Fuller’s *Operating Manual for Spaceship Earth* (1969):

*From this moment on, good old Earth could no longer be thought of as a natural force, but was to be regarded as a gigantic artefact. It was no longer a base; it was a vehicle. It was no longer the epitome of material; it was the sensitive system of all systems.[16]*

In fact, Fuller's text appeared two years after Bataille's major work on general economy, *The Accursed Share*, but already 35 years after the "Notion of Expenditure," a blueprint for Bataille's later thesis. All three texts, however, are connected through Vladimir Vernadsky's *The Biosphere* (1926),[17] to which Bataille refers in his notes & to which Fuller was obviously indebted, yet of which Sloterdijk appears unaware. Vernadsky's concept of Earth as biosphere was predicated on a global system of "circular" metabolism, by which the expropriation (transformation) of solar energy allows the production of entropy to amplify itself through feedback cycles of consumption & expenditure. This in turn permits the overall rate of dissipation to increase also, tending towards conditions of what biologists call *extremal forcing* – & of what Ilya Prigogine in the 1970s called *dissipative structures*. While the "conditions for dissipative structures are readily encountered in living systems, which are (i) open, (ii) governed by nonlinear evolution equations, & (iii) operate far from thermodynamic equilibrium,"[18] they are also encountered in other forms of self-propagating dynamic systems not conventionally considered to be *alive*. For example, cybernetic or economimetic systems exhibiting a general *technicity*, extending from microsystems to the biosphere & beyond.

By proposing the existence of the biosphere as "a specific life-saturated envelope of the Earth's crust" – in addition to the atmosphere, hydrosphere & lithosphere – Vernadsky was not only proposing that the entire planet should be viewed as an ecosystem analogous in its process to "life itself," but that "life processes" in general must be understood differently, extending beyond any restricted notion of *organism* to encompass the "inorganic body"[19] of, for example, geological processes:

*No chemical force on Earth is more constant than living organisms taken in aggregate, none is more powerful in the long run... Life is, thus, potentially & continuously disturbing the chemical inertia on the surface of the planet... The outer layer of the Earth must, therefore, not be considered as a region of matter alone but also as a region of energy & a source of transformation of the planet. To a greater extent, exogenous cosmic forces shape the face of the Earth, & as a result, the biosphere differs historically from other parts of the planet. This biosphere plays an extraordinary planetary role.*

*The biosphere is at least as much a creation of the sun as a result of terrestrial processes.[20]*

This last point is central to Bataille's reinterpretation of the biosphere as a *general economy*, defined as a system of constantly enlarging processes of dissipation, driven by what we might call a *solar technology*. It is in this conjunction of solar expenditure & biotechnical amplification that an *alien capital* can be seen to operate, not as the derivative of human-dependent operations, or even of evolution in general, but as their agent. Moreover, by its implicit relation of globally-consequential life-processes to planetary-scale *technological transformation*, & in its economy of metabolic force-feedback, Vernadsky's concept anticipates the logic of the Anthropocene. And just as Bataille's general economy

encompasses forces of destructive expenditure that are nevertheless *productive of ideology*, so too Vernadsky's biosphere encompasses those industrial forms of "systematic destruction" wrought by "civilised humanity," themselves *productive of biogenic impact*. [21] Thus:

*The release of [carbon dioxide] by Man in the process of his technical work... has already reached such an order that it must be taken into account in the geochemical history of the biosphere.* [22]

But where the Anthropocene is generally taken to describe a geological "epoch" defined negatively by such impacts, Vernadsky instead envisaged the inauguration of a new sphere of geological activity, the Noösphere (from Gk. *nous*: mind, intelligence), in which "the increase of the cultural biochemical energy of mankind is advancing steadily without fundamental regression... There is a growing understanding that this increase has no insurmountable limits, that it is an elemental geological process." [23] This Noösphere isn't just a product of a technological intelligence, it is itself that intelligence, productive of its own transformative processes of expenditure & aggregation.

#### 4. Negentropic Debt

A number of interventions in the discourse on the Anthropocene have adopted for their purposes a term derived from Erwin Schrödinger's 1943 lectures at the Dublin Institute for Advanced Studies, later published as *What is Life?: The Physical Aspect of the Living Cell* – namely, "negative entropy" [24] or, as Léon Brillouin felicitously abbreviated it in his 1953 study of information systems, "negentropy." [25] In the section entitled "Order Based on Order," about three-quarters through this lecture series, Schrödinger observes to his audience that "the laws of physics, as we know them, are statistical laws. They have a lot to do with the tendency of things to go over to disorder... The general principle involved is thermodynamics (entropy principle)." [26] He then proceeds to the issue at hand, the question: "What is the characteristic feature of life? When is a piece of matter said to be alive?"

"Living matter," Schrödinger notes, differentiates itself from inert matter by evading "the decay to equilibrium":

*When a system that is not alive is isolated or placed in a uniform environment, all motion usually comes to a standstill very soon... After that, the whole system fades away into a dead, inert lump of matter. A permanent state is reached, in which no observable events occur. The physicist calls this the state of thermodynamic equilibrium, or of 'maximum entropy.'* [27]

The distinction Schrödinger arrives at, is that a life system "feeds on 'negative entropy':"

*It is by avoiding the rapid decay into the inert state of 'equilibrium,'" he argues, "that an organism appears so enigmatic; so much so, that from the earliest times of human thought some special non-physical or supernatural force (vis viva, entelechy) was claimed to be operative in the organism, & in some quarters is still claimed.* [28]

For Schrödinger (& not only Schrödinger of course), in place of any mysterious *life-force* there is instead "metabolism" – that is to say, a system of *exchange* (μεταβάλλειν). But this metabolism isn't reducible merely to a redistribution of "matter" or "energy," but rather "Every

process, event, happening... in a word, everything that is going on in Nature means *an increase of the entropy* of the part of the world where it is going on. Thus a living organism *continually increases its entropy*,” & so “It can only keep... alive, by continually drawing from its environment negative entropy.” Consequently, “the essential thing in metabolism” is that it “*feeds upon negative entropy*, attracting... a stream of negative entropy upon itself, to compensate the entropy increase it produces by living...”[29]

By a slight inflection, this metabolic compulsion can be seen as underwriting conditions of political struggle within the “social organism” equivalent to that principle, already set down by Spinoza, of “the impulse (*conatus*) of self-sustainability at any price, impressing upon every life the form of a flight forward.”[30]

## 5. Ideo-metabolic Production

This concept of “metabolic exchange” has encouraged some confusion among cultural theorists, in part informed by Marx’s concept of metabolic rift[31] – in reference to ecological crisis tendencies under capitalism – & in part by an attribution of what amounts to *subjectivity* in the principle of negentropic exchange. In a recent text entitled “Dreams & Nightmares: Beyond the Anthropocene Era,” Bernard Stiegler writes: “A consensus exists in the scientific community, whether among physicists or chemists or biologists, that *life* is *what defers* the process of entropy, that is, what *retains* energy, transforms it & *organises* it into organs, organisations that constitute organisms.”[32] Yet as Derrida (to whom Stiegler is also alluding here) makes clear, “No doubt life protects itself by repetition, trace, *différance* (deferral). But we must be wary of this formulation: there is no life present *at first* which would *then* come to protect, postpone, reserve itself in *différance*.”[33] In addition, this deferral does not correspond to a *retention* (e.g. of energy: living systems, in any case, consume food & so energy cannot be conserved). Nor is there any entity to which the term “life” corresponds that decisively *produces its own Being* through a consumption of negentropy, rather it is the metabolic pre-disposition of entropy itself that gives rise to *entrained* – or *entroped* – structures of “spontaneous” self-propagation, as efficient conduits for the *maximisation* of entropic flow. (This synchronous arrangement, or *resonance*, defines what is called negentropy, since the one is in direct proportion to the other, as we will see discuss later.)

Among other things, Stiegler’s formulation is concerned with what appears to be an entirely paradoxical maintenance of *surplus* (energy reserve) in the deferral of entropy (stagnation/non-exchange/non-circulation), which will also have unintended implications for how he construes a political economy. For now, however, Stiegler envisages this retention/organisation as a process of “exo-somatisation,” or *externalisation* – i.e. of thought into hybrid realities: in this, the term coincides to some extent with *hyperstition* – since this deferral of entropy is ultimately attributed to a kind of embodied-embodying agency or intention. “The function of reason,” Stiegler writes, “is to produce negentropic bifurcations against entropy in general & against its own entropy in particular – here,” he adds, “we must spell entropy with an ‘a’ & an ‘h’: anthropy.”[34] Such an embodied-embodying entropy/anthropy cannot help but evoke a “transhumanist delirium”[35] – by which the anthropos is transformed into an agent of self-supersession, thus aligning the concept of “negentropy” with an idea of emancipation, in this case signifying a certain end: “the end of the Anthropocene, in the

epoch of disruption, which makes obvious that the Anthropocene is no longer sustainable, no longer liveable...”[36] But as Althusser already reminds us in his examination of *Capital*: “Once the anthropological given has been removed, the space remains, which is precisely what interests us...”[37] – this space which is also that of a *différance*, of a general substitutability, marking (under the pretence of a “deconstruction”) the interval of a *return* in Stiegler of what amounts to a “subject of History” in the very form of its negation.[38]

This interval or transposition from Anthropocene to a post-Anthropocene, or Neganthropocene, is itself supposedly accomplished through an exo-somatisation. Exo-somatisation, we are told, “is a *bifurcation* in the history of life”: a “*new regime of negentropy*” coinciding with a transposition to “neganthropology.”[39] Neganthropology is in turn taken to define the *différance* (this is Stiegler’s appropriation of Derrida’s term)[40] of *Anthropos*; the “differing & deferring” of the “end of *Anthropos*,” which constitutes an imperative: “it is *inconceivable* for us,” Stiegler insists, “to *remain* in the Anthropocene. We will have to *conceive, invent & exo-somatise* the Neganthropocene, & for that we need a neganthropology that will allow us to enter into a *new era*... a new age of political economy,” of a “noetic dream.”[41]

## 6. Exosomatism

How is it possible to differentiate this exo-somatisation from a post-humanism that all too readily resembles a transcendental agent – & indeed *rationality* – of humanity’s *living on*, beyond the end of its own “unsustainable,” “unliveable” epoch, if simply under a regime of inverted terminologies?

What is clear is that this exo-somatisation is envisaged simultaneously as *exchange & retention*, a *transformation & a conservation*. Its relation to a mode of political economy is articulated in terms of “freedom,” “combat,” “law”: “Freedom is what *produces* negentropy,” Stiegler says, “it is what *generates* negentropic acts. Freedom does not mean the freedom to choose” – as in Marx’s *false choices* – it is rather “the freedom to combat an entropic state of fact in order to establish a new negentropic reality. This entropic state of fact *is precisely a state of fact within which a new negentropic reality sets up a new state of law*...”[42] The immediate question here is how Stiegler’s eschewal of false choices is able to distinguish itself from a purely arbitrary bifurcation that feeds back into a “vicious circle” of quasi-supersession (from “new states of fact” to “new states of law”), & which accomplishes nothing more than its own exo-somatic *reification*: not as *différance*, but as a merely procedural negation-of-negation that is, “in fact,” an algorithmic rationality’s attempt to materialise a *raison d’être*. What, after all, is the imperative of the “us” in Stiegler’s figuring of the Anthropocene, to “conceive, invent & exo-somatise the Neganthropocene,” other than to avert the reality of that “end of *Anthropos*” that arrives (& is simultaneously deferred) under the guise of a recuperative Neganthropos? Of Being under the guise of a certain (instrumentalised) non-Being? That is to say, of a subjectivity defined within what Stiegler calls “*Automated Society*.”[43]

In doing so, this very *conscientious* exo-somatisation will have reinscribed a movement of “externalisation” which philosophy has, at least since Plato, associated with *technē* & the production of automata, by which technology broadly speaking is conceived as a *prosthesis*

of reason. Its purpose, Stiegler informs us, will have been “to produce bifurcations,” “to implement the function of reason” so as to “make noetic life possible in the universe”:

*Now is the time for this thematisation. And this is why it is time to take seriously what Binswanger & Foucault tell us, but while taking equally seriously what Azéma shows, namely, that noetic man is above all an oneiric man. This oneiric & noetic form of life has the capacity to exteriorise its dreams & thus to realise them in the form of technics – the issue being that technics produces pharmaka, which can always turn the dream into a nightmare.[44]*

This *production of possibility* for “noetic life” – being itself a narrative of *premonition*, as the purview of a certain futurity or what might be called *manifest destiny* – is sublimated here through a fictional correspondence with a *deferral of entropy* which, Stiegler adds, “I believe to be the true stakes of what Derrida called *différance* with an ‘a.’ But Derrida himself did not see this clearly.”[45] The point perhaps being that in *différance* there is, in fact, not a *deferral of entropy*, but *deferral as entropy*: the “death,” in Derrida’s reading of Freud, at the “origin” of life (& which inscribes all of its operations).[46]

## 7. The Instrumental Unconscious

Stiegler’s claim that exo-somatisation corresponds to a radical potential within *différance* that Derrida himself failed to grasp should be treated with an appropriate degree of scepticism, since, under the “sign” of *différance*, what is being summoned in Stiegler’s text is rather a type of techno-Hegelianism.[47]

Even if the implementation of a “function of reason” from a production of bifurcations did not imply a prelapsarian self-sufficiency – a “reason” from which this prosthetic function could be derived, as the “model” of an originary bifurcation – its “noetic dream” nevertheless remains that of a teleology destined to “conceive, invent & exo-somatise” one. This movement from Anthropos to Neganthropos – from “noetic life” to an “externalised” “function of reason” – bears all the traits of a dialectical mystification, in which supersession is always recuperated for the self-preservation of the power of enstatement “itself,” as both the subject & form of *power*, of *History* (even of so-called post-History), & of “the State” *as such*, since the Anthropocene here is an “era” or “epoch” only to the extent that it sustains itself[48] as a mode of duration & thus as a “genre” of Reason, whose “negation” is in fact the instrument of its propagation (not, as Stiegler says, simply as “*a new state of law*,” but as the Law of Genre itself).[49]

The true meaning of exo-somatisation comes into view as the effective *outsourcing* of a global regime of power in the expansion of the work of resource-exploitation, expropriation & expenditure. It corresponds, in neoliberal economics, to the mechanism of “continuous growth” (an apparent refutation of what Marx, in a restatement of the 2nd law of thermodynamics, calls the “law of the tendency of the rate of profit to fall”)[50] that requires a perpetual profit-margin creep abetted by ever-more-virulent forms of enforced inequality & a “reserve” of alienated labour (negentropy).

The Neganthropocene, as Stiegler defines it, possesses at best the character of a “regime change,” in which a certain *ambivalence* in its binary organisation comes into view. The

freedom entailed in such a movement can be no more than a structural bias: the handily-dandy alternation or oscillation of *signifiers for the Law*, even if they apparently constitute its “governing” terms – Anthropos/Neganthropos – & so representing at best a *diversion, detour* or *détournement* of subversion itself. Contrary to the assertion that such a movement is productive of a “new reality” – a *sur-reality*, even – what this re-inscription attempts is a homeostatic reduction of *différance* to a simple opposition, designed for no other purpose than to preserve the Law under whose sign it would indeed represent a *false choice* – were such a reduction possible in anything other than appearance.

This re-inscription of precisely those dualisms (inside/outside; physis/technē, etc.) that the polysemy of *différance* deconstructs,[51] echoes what Benjamin Noys has described in instrumentalist terms as “The aim of accelerationists... to engage *with technology & forms of capitalist abstraction*”[52] so we can invent a *new post-capitalist future*.”[53] Just as with Stiegler’s insistence that “humanity” accomplishes itself by “organic projection” – that is, “by projecting organs outside itself” – such an *engagement* needs firstly to be understood as nothing but *abstract & technological*, such that any agent of acceleration or noetic exosomatisation could never be, as it were, *internal to itself*. So too the “noetic dream” cannot stand in an objectified relation to “technology,” just as “negentropy” cannot “*produce... différence*,” since *différance/technē* already inscribe the “economy of negentropy.”[54] Moreover, neither does such a thing as “humanity” exist, here, other than as a moralistic alibi (Sloterdijk) for processes of exploitation that are subsumed under an appeal to a *common future*, whose accomplishment in reality can only be effected by an impoverishment of that mass of “humanity” (& so-called inhumanity) that must labour in its production.

## 8. The Whole Existence of Structure

On this point it is instructive to return to the discourse from which Stiegler’s terminology derives, situated as it is at the intersection of physics & biology, if not politics & psychology. The thermodynamic interpretation of evolution has recently produced some interesting theoretical outcomes. In a series of papers co-authored since 2014, Jeremy England has advanced the thesis – devolved from Prigogine’s ideas on dissipative structures – that what we call “life” is not in opposition to entropy, but is itself a *function* of entropy, produced by it, dependent upon it, & engineered – in a manner of speaking – to maximise its increase. In this scenario, evolution, from its inception, is an economy of ever-increasing efficiency in circulation & expenditure, rather than an economy of conservation, or “energy retention” (however this might be conceived).

In a talk given in 2014 at the Karolinska Institute (Stockholm), England defined the physical properties of “life” as:

1. Self-replication;
2. Sensing, computation, & anticipation;
3. Effective absorption of work from environment.

According to England’s observations, “when a group of atoms is driven by an external source of energy (like the sun or chemical fuel) & surrounded by a heat bath (like the ocean or atmosphere), it will often gradually restructure itself in order *to dissipate increasingly more*

*energy*.”[55] Adapted “through rounds of iterative selection”[56] –this tendency to spontaneously align with a dissipative increase effectively *engineers* “self-replicating molecules,” in which the *algorithmic* corresponds to *life-processes*. Thus “self-replication,” England argues, is a process that “must invariably be fuelled by the production of entropy.”[57] Computer simulations have shown that, with a high statistical probability, self-replication does indeed undergo “extremal thermodynamic forcing” capable, in theory, of producing complex life-systems. It is, in the parlance of Noys, inherently accelerationist. Moreover, it marks an accelerationism whose *agency* is not some alien entity – “in the sense of being a register of alterity or radical disconnect from the world,” as Negarestani puts it[58] – but is the *law* of entropy itself.

These novel self-replicating structures do not evolve *despite* their dissipative character, but *because of it*: they are not “tolerant” of change but change-determined, since this is the very basis of their self-organisational possibility. The emergence of life-systems may thus be conceived as a function of resonance (the oscillative character of *dissipation* interacting with itself *in synchronisation* to achieve increase – or what England calls “resonant adaptation”). [59] In such a system, *différance* would describe the minimum energetic cost of maintaining a far-from-equilibrium state & the (iterative) mechanism of its *driven stochastic evolution*. [60] Yet what drives it is not a Stieglerian exo-somatisation – of a latent “libidinal economy” translated into a “function of reason” (from chemotaxis to an approximation of Anthropoc “intelligence”) – but an emergent computation in the *en-troped* structure of evolutionary possibility itself, (what Althusser, echoing Marx, calls “an authorless theatre”[61]) defining a “Noösphere” analogous to Fuller’s synergetics, a global “geometry of thought”[62] or *internet of everything*.

To rephrase a formulation of Derrida’s, vis-à-vis the Freudian *death drive*: Is it not already *entropy* at the origin of a life which can defend itself against entropy only through an *economy* of entropy...?[63] This would imply, contrary to Stiegler’s insistence upon exo-somatisation, that – as Althusser says – “the existence of structure” is “in its effects”; “that the effects are not outside the structure, are not a pre-existing object, element or space in which the structure arrives to *imprint its mark*: on the contrary, it implies that the structure is immanent in its effects... that *the whole existence of the structure consists of its effects*.”[64] Or as Benjamin Bratton has recently observed, “infrastructure orchestrates decisions.”[65] In the *Grundrisse* Marx describes this as “a particular *ether* which determines the specific gravity of every being which has materialised within it”[66]; an “ether” that may be said to be constitutive of a general *ecology of mind*. Such an overdetermination of structural logic is a mode of *entropement*; its movement not that of a “Neganthropology” but of an entropomorphology. Or simply, entropology.

## 9 Entropology’s “Inorganic Body”

Just as the movement of entropy has been weaponised, so to speak, in the movement of alien capital, so too the logic of *entropement* needs to be contended with on the level of this movement’s *rationale*. That is to say, in the absence of any teleology, this movement is nevertheless *directed* by the drive towards ever & ever greater dissipation: it is this *drive* that defines the entire evolutionary *rationale*, its “decisive” orientation. Evolution is, so to speak, its “inorganic body”; its “body-without-organs.”

Certain tendencies of “accelerationist” thought have recently reprised the belief that an “integrated incentivising complex of consumer capitalism”[67] is the *driving force* of techno-social evolution & that there needs to be shown that there are other possible “motors... for driving human progress” – whereas it is necessary to recognise that the very framework of such “possibilities” is determined, not by the viability of competing models of *human incentivisation*, but by the field of entropological drives within which both human & non-human agency alike are inscribed. Such a generalised *rationale* assumes a proto-cybernetic form in Marx’s early investigations of capital, as what he terms the “social brain.” This “brain” corresponds to a distributed *agency* in the operations of capital that encompass the entire field of techno-social relations: what Marx thus intuitively as a “general intellect” & which at a certain point in Notebook V of the *Grundrisse* (“Circuit of Capital”) also elides with “general conditions of production” (inclusive of systems of “communication”). Thus:

*The development of fixed capital indicates to what degree general social knowledge has become a direct force of production, & to what degree, hence, the conditions of the process of social life itself have come under the control of the general intellect & been transformed in accordance with it.[68]*

The foundations of Marx’s “general intellect” ultimately reside in those operations of entropy in which the so-called forces of nature themselves originate (as “man’s inorganic body”) & in which the dynamic of “alienation” evolves towards a consciousness & a production of subjectivities that *is not modelled on the human but produces it*. This is the very contrary of a persistent strain of humanistic Marxism in which alienation is instigated *against* subjectivity & which, through a correspondingly inverse movement, initiates what Matteo Pasquinelli calls “the belief that the technologies of industrial automation (already looking like robots) might become a true agent of political change & social emancipation under the command of public education” (that is to say, as the instigation of an *alienation of power*).[69]

In an attempt to establish a “labour theory of AI,” Pasquinelli identifies in this movement what amounts to a general repetition automation or technicity. The source of this observation is credited equally to Marx & the inventor of the Analytic Engine, Charles Babbage,[70] & is summed up in the proposition that “a machine always emerges *by imitating a previous division of labour*, machine intelligence included”[71]:

*Marx had already quoted Babbage in The Poverty of Philosophy during his exile in Brussels in 1847 &, since then, adopted two analytical principles that were to become pivotal in Capital in drawing a robust theory of the machine & in grounding the theory of relative surplus value. The first is what could be defined as “the labour theory of the machine,” which states that a new machine comes to imitate & replace a previous division of labour. This is an idea already formulated by Adam Smith, but better articulated by Babbage due to his greater technical experience. The second analytical principle is usually called the “Babbage principle” & is here renamed “the principle of surplus labour modulation.” It states that the organisation of a production process in small tasks (division of labour) allows exactly the necessary quantity of labour to be purchased for each task (division of value). In this respect the division of labour provides not only the design of machinery but also an economic configuration to calibrate & calculate surplus labour extraction. In complex forms of management such as Taylorism, the principle of surplus labour modulation opens onto a*

*clockwork view of labour, which can be further subdivided & recomposed into algorithmic assemblages. The synthesis of both analytical principles ideally describes the machine as an apparatus that actively projects back a new articulation & metrics of labour. In the pages of Capital the industrial machine appears to be not just a regulator to discipline labour but also a calculator to measure relative surplus value, echoing the numerical exactitude of Babbage's calculating engines.[72]*

It would not be fantastical to see in this logic of *modulation* an implicit entropement at work, as the recursion of a “division of labour” in its relation to both the principle of *conservation* & the drive towards *expenditure*. By precisely such a (neg/entropic) movement of self-alienation & re-circulation does capital represent the operation of its “transcendence” by transforming the crises of production into an expanded “means” of self-propagation – that is to say, of an *auto-poiēsis*. Marx describes this via a chain of metonymic substitutions (i.e. “divisions of labour”), such that “part of the capital, depreciated by its functional stagnation, would recover its old value. For the rest, the same vicious circle would be described once more *under expanded conditions of production, with an expanded market & increased productive forces.*”[73]

By situating Taylorism's productivist machine-psychopathology *in advance* within a generalised technicity, the “general intellect” of the *Grundrisse* can indeed be seen to evolve in *Capital*, as Pasquinelli proposes, “into a machinic collective worker, almost with the features of a proto-cybernetic organism, and the industrial machine becomes a calculator of the relative surplus value that this cyborg produces.”[74] If only because this relative surplus value is the necessary *irreconcilability* of the “machine” & “cyborg” to any thought of capital that does not recognise that the division of labour which produces the machine in the first place *is the alienation at the origin of value itself*. Thus:

*It was not the invention of the steam engine (means of production) that triggered the industrial revolution (as it is popular to theorise in ecological discourse), but rather the developments of capital and labour (relations of production) demanding a more powerful source of energy. The steam-engine itself, such as it was at its invention during the manufacturing period at the close of the seventeenth century, and such as it continued to be down to 1780, did not give rise to any industrial revolution. It was, on the contrary, the invention of [tooling] machines [Werkzeugmaschinen] that made a revolution in the form of steam-engines necessary.[75]*

And if the “division of labour” is, as Pasquinelli says, “the political inventor of the machine,” this *technē politikē* must itself nevertheless be distinguished from a product of that engine of perception in which alienation is misrecognised as a *political artefact* rather than as the pre-condition of any (political) relation whatsoever. Thus is the repetition automation of this “division of labour” marked by a recursive, topological relation to its *cause*. At the same time, the irreconcilability it describes – between a generalised technicity with the implied teleology of “relations of production” – is not the *flaw* in capital's totalising movement, but indeed “the contrary.” In this, wherever it arises within this system, irreconcilability always corresponds to that dynamic interval in which a certain dissipative (“entropic”) social production is ever more accelerated & ramified *towards its ideal form*. [76]

## 10. Techno-teleology

The “circuit of reproductive consumption” – driven & in fact *organised* by the movement of entropy – is not a “loss of meaning” in itself,[77] but instead what Bataille defines as the “*relation* to this loss of meaning.”[78] It is *related* “to no presence, no plenitude”[79] – which nevertheless permits it the non-appearance of a certain ideality. A certain *reality*, in fact. Even if this movement does not produce new conceptual unities (Stiegler’s “exo-somatisation”), it retains – by way, or by default of, this non-production – a relation to that which *opens the question of meaning*. This is the mark of its *self-evidence*. Consequently – & despite appearance otherwise – there can be, as Derrida shows, “no possible opposition” between “an economy of circulation (a restricted economy)” & a “general economy” (an economy of expenditure without reserve).”[80] In both formulations production – as *reproductive consumption* – remains bound to a cybernetic *pro-gramme*, vested in a base materiality of the “real.”[81] The repetition automation of Bataille’s “pure expenditure” is no exception. Entropy always entails the *work of dissipation*, & this work extracts a cost & imposes a value – even if it is under the sign of a non-value, to which the “system of expenditure” can only *relate* (without recuperating). In other words: to which it can do *nothing other than relate*.

In *Beyond the Pleasure Principle*, Freud had proposed that consciousness itself – as the phantasmatic surface-effect of what, in the “Note upon the Mystic Writing-Pad,” is presented as a kind of writing-machine – must be understood as psychic expenditure, discharge, expiration (of the “excitatory processes” of sensory experience, etc.). The idea of preservation of “life” (which Freud calls the reality principle) is always linked to the maintenance of a certain mode of inscription as *expenditure*, so that when we speak of preservation we are speaking of expenditure itself *as repetition*, or more specifically *as repetition automation* (i.e. the “pure” relation of *différance*). This automation, vested in a generalised technicity, defines the contours of what insistently figures as the “real.” It marks an event horizon, between a hermeneutics of thought itself & the admission of the Freudian “thing” – that *thing that thinks* – in which the work of comprehension (& work *as such*) is inscribed as if in advance of itself *as the index of an impossible object*. This *thing* has nothing to do with any representation or resemblance: of so-called human intelligence, for example, or of its divinity in the form of a Pure Reason. “It” is that to which it is only possible *to relate*: it is that complex of relations “itself.” If this impossible object may be signalled by the term Noösphere, it is solely to the extent that its “worldliness” remains irreducible to *historical thought* (of an Anthropocene, to be exact) which could be in any way situated as the *object* of its own transcendence (or even as the *subject* of a noetic dream of the “post-Anthropocene”).

It is not accidental that the Noösphere coincides – in the metaphors of a certain non-teleological, recursive & broadly “ecological” thought – with what is subsumed in the operations of what Freud terms the unconscious. Rejecting the “Kantian theorem that time & space are ‘necessary forms of thought,’” Freud contends that “unconsciousness mental processes are in themselves ‘timeless.’ This means in the first place that they are not ordered temporally, that time does not change them in any way & that the idea of time cannot be applied to them.”[82] The co-ordinates of this End-of-History are given to correspond to all the “unfulfilled but possible futures to which we still cling in phantasy, all the strivings of the ego which adverse external circumstances have crushed, & all our suppressed acts of volition

which nourish in us the illusion of Free Will.”[83] Contingent upon which is thus also “the value of play” as defining “pure productivity”[84] – which is to say, pure expenditure. To the extent that this Kantian “Free Will” only *simulates* the “free-play” of a signifying economy, its “spontaneity” is that of a *mimēsis of spontaneity*: freedom posed as the translation of “nature” into Reason.

The entire domain of the Noösphere – in which Stiegler’s “noetic dream” is necessarily subsumed – needs also to be considered in this light.

If posthumanism seeks to transcend what at the same time, & in the same gesture, it reinscribes by imitating the previous “division of labour” in the nature/technology dichotomy, what does its entirely predictable appeal to dialectical Reason mean to accomplish if not the mystification of the real as that which, on its own cognisance, alone “comprehends” the so-called Anthropocene? Is this not the trajectory of Stiegler’s “noetic dream,” in its desire to turn the tables, so to speak, as that which *exceeds* the dissipative systems of anthropocapitalism, as *neganthropology*? A dream of Reason that in its transcendental delirium engenders monsters, just as in Goya’s vision, retold by Feuerbach, Marx, Bataille, Derrida? This delirious slumber which “must be effectively traversed so that awakening will not be a ruse of dream. That is to say [...] a ruse of reason. The slumber of reason is not, perhaps, reason put to sleep, but slumber in the form of reason.”[85]

The ambivalence in which this compulsive dichotomisation is in fact founded, isn’t opposed to the movement of entropy (which is *differential* & not *teleological*), but is the condition of its *différance*. For the same reason, entropy can no longer be said “to reduce life to its original condition in inanimate matter”[86] but to situate the impetus of “life” (& every other mode of production) in a generalised condition of technicity. And if the real power of *mimēsis* derives from the fact that it “can accommodate itself to political systems that are different, even opposed to one another,”[87] then it is insufficient simply to appeal to an increase in scales of complexification – to a mere *accelerated* repetition automation & a certain *gratuitousness* in the logic of expenditure – as availing some kind of (artificial) intelligence automatically productive of a critique of (capitalist-humanist) value. By situating an “alien” ambivalence as the “sign” of that which must remain non-exchangeable as a use-value, it marks not the limit of exchange-value as such, but of its subsumption into a phantasmatic *non-ideology*: the totalising subjectivisation of this entropomimesis – call it, *xenocapitalism*. [88]

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[1] Liaisons [Collective], “The Evil to Come,” *The New Inquiry* (23 April 2019): <https://thenewinquiry.com/the-evil-to-come/>

[2] Jean-Luc Nancy, “Changing of the World,” trans. Steven Miller, *A Finite Thinking*, ed. Simon Sparks (Stanford: Stanford University Press, 2003) 22.

[3] Nancy, “Changing of the World,” 31.

[4] Nancy, “Changing of the World,” 6.

- [5] Nancy, “Changing of the World,” 30.
- [6] Peter Sloterdijk, “The Anthropocene: A Process-State on the Edge of Geohistory?” trans. Anne-Sophie Springer, *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments & Epistemologies*, eds. Heather Davis & Etienne Turpin (London: Open Humanities Press, 2015) 327.
- [7] Sloterdijk, “The Anthropocene,” 329-30.
- [8] Sloterdijk, “The Anthropocene,” 334.
- [9] See chapter 15 of Karl Marx, *Capital*, vol. III, ed. Friedrich Engels (New York: International Publishers, 1967 [1894]).
- [10] Vincent Garton, “Accelerate Marx,” *Cyclonotrope* (7 March 2017): <https://cyclonotrope.wordpress.com/2017/03/07/accelerate-marx/>
- [11] Primož Krašovec, “Alien Capital,” trans. Miha Šuštar, *Vast Abrupt* (July 2018): [vastabrupt.com/2018/07/11/alien-capital/](http://vastabrupt.com/2018/07/11/alien-capital/)
- [12] Marx, *Capital* III, 259.
- [13] Krašovec, “Alien Capital,” 2.
- [14] Sloterdijk, “The Anthropocene,” 338.
- [15] Georges Bataille, “The Use Value of D.A.F. de Sade,” *Visions of Excess*, trans. Allan Stoekl (Minneapolis: University of Minnesota Press, 1985) 99.
- [16] Sloterdijk, “The Anthropocene,” 335.
- [17] The book was written in Paris, but not translated into French until 1929.
- [18] Albert Goldbeter, “Dissipative Structures in Biological Systems: Bistability, Oscillations, Spatial Patterns & Waves,” *Philosophical Transactions of the Royal Society: Mathematical, Physical & Engineering Sciences* 376.2124 (June 2018): <https://doi.org/10.1098/rsta.2017.0376>
- [19] Marx, in the 1844 *Economic & Philosophical Manuscripts*, famously states that “nature is man’s inorganic body.” Here, however, the *transformation of nature* isn’t accomplished by human labour, but is an *apriori condition* of generalised technicity (alienation): the inorganicity of nature in which the human is thus *embodied*. It’s in this sense that Marx’s formulation needs to be understood.
- [20] Vladimir Vernadsky, *The Biosphere*, trans. David Langmuir & Mark McMenamin (New York: Springer, 1998) 56-7.
- [21] Vernadsky, *The Biosphere*, 143.
- [22] Vladimir Vernadsky, *Geochemistry & the Biosphere*, ed. Frank B. Salisbury (Santa Fe: Synergetic Press, 2007) 185.
- [23] Vladimir Vernadsky, “The Transition from the Biosphere to the Noösphere,” trans. William

Jones, *21st Century* (Spring/Summer, 2012): 27-8.

[24] Erwin Schrödinger, *What is Life?: The Physical Aspect of the Living Cell* (Cambridge: Cambridge University Press, 1944).

[25] Léon Brillouin, “The Negentropy Principle of Information,” *Journal of Applied Physics* 24 (1953): 1152-1163.

[26] Schrödinger, *What is Life?* 68-69.

[27] Schrödinger, *What is Life?* 69.

[28] Schrödinger, *What is Life?* 70.

[29] Schrödinger, *What is Life?* 73.

[30] Qtd in Sloterdijk, “The Anthropocene,” 329.

[31] Marx, *Capital* III, 195ff: Marx refers to “social metabolism” – the term “metabolic rift” itself was coined by John Bellamy Foster, *Marx’s Ecology: Materialism & Nature* (New York: Monthly Review Press, 2000).

[32] Bernard Stiegler, “Dreams & Nightmares: Beyond the Anthropocene Era,” trans. Daniel Ross, *Alienocene: Journal of the First Outernational* (June 2019): 9 ([alienocene.files.wordpress.com/2019/06/bs-dreams.pdf](http://alienocene.files.wordpress.com/2019/06/bs-dreams.pdf))

[33] Jacques Derrida, “Freud & the Scene of Writing,” *Writing & Difference*, trans. Alan Bass (London: Routledge, 1978) 203.

[34] Stiegler, “Dreams & Nightmares,” 6.

[35] Stiegler, “Dreams & Nightmares,” 1.

[36] Stiegler, “Dreams & Nightmares,” 23.

[37] Louis Althusser, “The Object of Capital,” *Reading Capital: The Complete Edition*, trans. Ben Brewster & David Fernbach (London: Verso, 2015) 337.

[38] The question here is one already posed by Derrida: “Under what conditions, then, could one *mark*, for a philosopheme in general, a *limit*, a margin that it could not infinitely reappropriate, *conceive* as its own, in advance engendering & interning the process of its expropriation (Hegel again, always), proceeding to its inversion by itself?” Jacques Derrida, “Tympan,” *Margins of Philosophy*, trans. Alan Bass (Chicago: University of Chicago Press, 1982) xiv.

[39] Stiegler, “Dreams & Nightmares,” 10.

[40] See Jacques Derrida, “Différance,” *Margins of Philosophy*, trans. Alan Bass (Chicago: University of Chicago Press, 1982) 1-28.

[41] Stiegler, “Dreams & Nightmares,” 11.

[42] Stiegler, “Dreams & Nightmares,” 23 – emphasis added.

[43] Stiegler, “Dreams & Nightmares,” 23.

[44] Stiegler, “Dreams & Nightmares,” 23.

[45] Stiegler, “Dreams & Nightmares,” 21.

[46] Derrida, “Freud & the Scene of Writing,” *passim*.

[47] The dialectical movement of Anthropos/Neganthropos is both instrumental & finite (premised upon a sequence of ends, of unsustainable epochs), & totalising (it seeks to account for the transcendence of the epochal as such). The “end of the finitude of man,” as Derrida says, “the unity of the finite & the infinite, the finite as the surpassing of the self – these essential themes of Hegel’s are to be recognised at the end of the Anthropology when consciousness is finally designated as the ‘infinite relation to self.’” Jacques Derrida, “The End of Man,” *Margins of Philosophy*, 121.

[48] Stiegler, “Dreams & Nightmares,” 23.

[49] See Jacques Derrida, “The Law of Genre,” *Acts of Literature*, ed. Derek Attridge (London: Routledge, 1992) 221-252.

[50] See both the *Grundrisse* (1857) & chapter 13 of *Capital* volume III (1894) – the principles of the 2nd law of thermodynamics were stated by Kelvin (1851) & Clausius (1854) virtually contemporaneously.

[51] Derrida, “Différance,” *Margins of Philosophy*, 1-28.

[52] The expression “capitalist abstraction” is pleonastic, since capitalism *is* abstraction, evolved into a *system of self-propagation*.

[53] Benjamin Noys, “Accelerationism as Will & Representation,” *The Future of the New: Artistic Innovation in Times of Social Acceleration* (Amsterdam: Valz/Antennae, 2018): [academia.edu/3982789/Accelerationism\\_as\\_Will\\_&\\_Representation](https://academia.edu/3982789/Accelerationism_as_Will_&_Representation) – emphasis added.

[54] Stiegler, “Dreams & Nightmares,” 24. Here Stiegler seeks to equate an “economy of entropy” with “libidinal economy,” by appeal to a certain Freudian language that should cause us to recall Derrida’s injunction that “The difference between the pleasure principle & the reality principle, for example, is not uniquely, or primarily, a distinction, an exteriority, but rather the original possibility, within life, of the detour, of deferral (*Aufschub*) & the original possibility of the economy of death.” Derrida, “Freud & the Scene of Writing,” 198.

[55] Qtd in Natalie Wolchover, “A New Physics Theory of Life,” *Quanta Magazine* (22 January 2014): [quantamagazine.org/a-new-thermodynamics-theory-of-the-origin-of-life-20140122](https://quantamagazine.org/a-new-thermodynamics-theory-of-the-origin-of-life-20140122) – emphasis added.

[56] S. Sarkar & J.L. England, “Sufficient Physical Conditions for Self-Replication,” *Physical Review E* 100 (2019) (abstract).

[57] Jeremy L. England, “Statistical Physics of Self-Replication,” *The Journal of Chemical Physics* 139 (2013).

[58] Reza Negarestani, “Unidentified Gliding Object: The Day the Earth was

Unmoored,” *Šum* 11 (2019): 1653.

[59] What is called evolution may thus be understood not as a process of “selection” (among competing forms) but of “resonant adaptation” (*différance*), comparable to the semiological (Saussurian) principle of *differences without terms*. See Maurice Merleau-Ponty, “Indirect Language & the Voices of Silence,” *Signs*, trans. Richard C. McCleary (Evanston: Northwestern University Press, 1964) 39: “What we have learnt from Saussure is that, taken singly, signs do not signify anything, & that each one of them does not so much express a meaning as mark a divergence of meaning between itself & other signs. Since the same can be said of all signs, we may conclude that language is made of differences without terms; or more exactly, that the terms of language are engendered only by the differences which appear among them.”

[60] Cf. J.M. Horowitz, K. Zhou & J.L. England, “Minimum Energetic Cost to Maintain a Target Nonequilibrium State,” *Physical Review E* 95 (2017).

[61] Althusser, “The Object of Capital,” 349.

[62] Buckminster Fuller, *Synergetics: The Geometry of Thinking* (New York: Macmillan, 1975).

[63] Cf. Derrida, “Freud & the Scene of Writing,” 202.

[64] Althusser, “The Object of Capital,” 344.

[65] Benjamin Bratton, *The Terraforming* (Moscow: Strelka, 2019): [strelkamag.com/en/article/excerpt-bratton-the-terraforming](http://strelkamag.com/en/article/excerpt-bratton-the-terraforming).

[66] Karl Marx, *Outlines of the Critique of Political Economy* [*Grundrisse der Kritik der politischen Ökonomie*], trans. Martin Nicolaus (London: Penguin, 1973) 106-7.

[67] Roc Jiménez de Cisneros, “The Accelerationist Vertigo (II): interview with Robin Mackay, CCCB Lab (5 November 2014): [lab.cccb.org/en/the-accelerationist-vertigo-ii-interview-with-robin-mackay/](http://lab.cccb.org/en/the-accelerationist-vertigo-ii-interview-with-robin-mackay/)

[68] Marx, *Grundrisse*, 706: “Nature builds no machines, no locomotives, railways, electric telegraphs, self-acting mules etc. These are products of human industry; natural material transformed into organs of the human will over nature, or of human participation in nature. They are organs of the human brain, created by the human hand; the power of knowledge, objectified. The development of fixed capital indicates to what degree general social knowledge has become a direct force of production, & to what degree, hence, the conditions of the process of social life itself have come under the control of the general intellect & been transformed in accordance with it; to what degree the powers of social production have been produced, not only in the form of knowledge, but also as immediate organs of social practice, of the real life process.”

[69] Matteo Pasquinelli, “On the Origins of Marx’s General Intellect,” *Radical Philosophy* 2.06 (Winter 2019): 43.

[70] See Charles Babbage, *On the Economy of Machinery and Manufactures* (London: Charles Knight, 1832).

[71] Pasquinelli, “On the Origins of Marx’s General Intellect,” 47.

[72] Pasquinelli, “On the Origins of Marx’s General Intellect,” 46-7.

[73] Marx, *Capital* III, 179.

[74] Pasquinelli, “On the Origins of Marx’s General Intellect,” 47.

[75] Pasquinelli, “On the Origins of Marx’s General Intellect,” 47 – emphasis added; see Karl Marx, *Capital: A Critique of Political Economy*, vol. I, trans. Ben Fowkes (London: Penguin Books, 1990) 496.

[76] Just as global debt economics is ramified in the self-transcending myth of the post-Anthropocene.

[77] Jacques Derrida, “From Restricted to General Economy: A Hegelianism without Reserve,” *Writing & Difference*, 271.

[78] Qtd in Derrida, “From Restricted to General Economy,” 270 – emphasis added.

[79] Derrida, “From Restricted to General Economy,” 272.

[80] Jacques Derrida, “Economimesis,” trans. R. Klein, *Diacritics* 11.2 (Summer 1981 [1975]): 4.

[81] “It is also in this sense that the contemporary biologist speaks of writing & *pro-gramme* in relation to the most elementary processes of information within the living cell. And finally, whether it has essential limits or not, the entire field covered by the cybernetic *programme* will be the field of writing. If the theory of cybernetics is by itself to oust all metaphysical concepts – including the concepts of soul, of life, of value, of choice, of memory – which until recently served to separate the machine from man, it must conserve the notion of writing, trace, grammē, or grapheme, until its own historico-metaphysical character is also exposed.” Jacques Derrida, *Of Grammatology*, trans. Gayatri Spivak (Baltimore: Johns Hopkins University Press, 1976) 9.

[82] Sigmund Freud, “Beyond the Pleasure Principle,” *The Standard Edition of the Complete Psychological Works of Sigmund Freud* [SE], trans. James Strachey (London: Hogarth Press & The Institute of Psycho-analysis, 1954) XVIII.28.

[83] Freud, “The ‘Uncanny,’” *SE* XVII.6.

[84] Derrida, “Economimesis,” 6.

[85] Derrida, “From Restricted to General Economy,” 251.

[86] Freud, “Why War? [Letter to Albert Einstein, September 1932],” *SE* XXII.211.

[87] Derrida, “Economimesis,” 4.

[88] Derrida, “Economimesis,” 9.

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